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ETHICS OF SCIENCE: MORAL PRINCIPLES AND THEIR ROLE IN THE DEVELOPMENT OF SOCIETY

Farrukh Usmonov
Doctor of Philosophy, University of Economics and Pedagogy

Abstract:
The article examines the importance of science ethics as a system of values regulating scientific activity and the personal responsibility of the researcher to society. The main attention is paid to how morality and spirituality contribute to the development of personality, as well as the influence of ethical norms on maintaining harmony between science, nature and society. The key ideas of science ethics proposed by R. Merton, including universalism, communism, selflessness and organized scepticism, as well as the contribution of other scientists, such as N. Wiener and M. Polanyi, to the development of ethical norms are analysed. A historical overview of the role of ethics in limiting and supporting freedom of research from antiquity to the present day is given. Moral aspects in scientific activity and their necessity in maintaining a balance between scientific progress and the moral responsibility of scientists to humanity are considered.

Keywords: Ethics of science, moral principles, moral responsibility, spirituality, freedom of research, social responsibility, historical review, society, science and morality.

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Introduction

Science is to serve to maintain the balance between man and humanity, peace and stability on earth, nature and society. The development of science and humanity is multifaceted, and its greatness is also determined by the level of spiritual maturity. Only a person with mature spirituality can rationally solve the problems of society. At the same time, moral standards characteristic of people changes under the influence of social development and life needs. If the formation and development of education, social relations, human behaviour and relations between them are not connected with spirituality and morality, they will move further away from the limits of possibilities. Morality is the manifestation of spirituality in practice, and the knowledge, worldview, perception and faith of a person are reflected in his behaviour in a unique way, and his spirituality is seen as moral qualities. It is necessary to emphasize that where there is no morality, a person cannot be formed as a social person. Only on the ground of morality, the meaning and purpose of life, duties and responsibilities to society are formed in people.

Literature analysis and methodology

When a person operates in society, he lives mainly by following the rules of ethics. Therefore, scientists who work in science also create taking into account moral aspects. The part that studies and regulates ethics in science is called science ethics. The goal of science ethics is to educate the moral image of the scientist who researches science, to educate the sense of responsibility, which means that he is responsible for the fate of man and humanity. At the same time, the main goal of this science is to explain and study the ethical norms that apply in the process of scientific research and scientific knowledge, and to analyse the ethical issues that occur in society in the process of

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advancing the science.

Science ethics is a system of concepts that reflect the criteria that show the extent to which a scientist's activities are compatible with the ethical values recognized by society, and the content and importance of his activities, and the issues related to ethics [1].

The following can be seen as the goal of science ethics:

- preventing science from serving self-interested goals;
- to prevent scientific research and experiments from having a destructive effect on the person, society, and the ecological environment;
- to ensure the future of humanity, society and nature.

Scientific ethics plays a major role in the development of specific, humanitarian and natural sciences, as well as genetics, physiology, microbiology, industry, medicine, agriculture, and information technologies. At the same time, the ethics of science is to use science for the sake of man and humanity, their perspective, the preservation of peace and stability on earth, the preservation of the balance and harmonious relationship between nature and society.

Discussion

The term "ethics of science" was first used and theoretically justified by the American philosopher Robert King Merton.

Merton introduces the following as basic rules in the field of scientific ethics:

1. Introduction of the term "ethics of science" (see "ethos of science"). Merton considers the ethics of science as a system of values and standards that regulate the activities of scientists;
2. Distinguish the four main imperatives of scientific ethics:

- Universalism - evaluation of scientific achievements should be independent of the scientist's personal characteristics.
- Communism - scientific knowledge is public property.
- Self-sacrifice - scientists should be motivated to pursue the truth, not self-interest.
- Organized scepticism - a critical approach to any scientific claims;

3. Justification of the need to comply with ethical standards to ensure the effectiveness and development of science [2].

At the same time, several scientists who made a great contribution to the development of scientific ethics can be cited. For example, Norbert Wiener in his book "Cybernetics, Communication and Control, Animal or Machine" (1948) raised ethical issues related to the development of cybernetics [3], while Vannevar Bush in his article "Science - Unlimited Limits" (1945) emphasizes the importance of ethical issues in research. Michael Polanyi discusses the importance of "personal knowledge" in the field of science and the need for ethical standards in the scientific community.

Broadly speaking, the term "ethics of science" has emerged from the collective efforts of many scientists, philosophers, and sociologists who have sought to develop ethical principles for scientific research.

One of the remarkable features of modern science is that ethical issues are becoming more and more important in it. Although the interest in these problems did not appear today, it has a long and meaningful history. Scientific studies show that the question of the scientist's research freedom and responsibility has become acute nowadays. So, why is it necessary to determine the

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boundaries of a scientist's freedom of research, that is, his right and responsibility? In this regard, the great physicist A. Einstein said "... we are interested not only in the technical problem of ensuring and maintaining peace, but also in the important task of education and enlightenment. If we are to fight against the forces that threaten to suppress personal and intellectual freedoms, then we must be clear about what we are risking and what we owe to the freedom our forefathers fought so hard for. Without this freedom, we would not have Shakespeare, Goethe, Newton, Pasteur, Faraday, or Lister. We would not have comfortable housing, railways, telegraph, radio, cheap books, protection against epidemics. Culture and art did not serve everyone. There would be no machines to free the worker from the drudgery involved in the production of the goods that are needed in the first place. "Only free people could become the authors of the inventions and creations of the soul that recognize the value of life before our eyes" [4]. Also, G.S. Khromov pointed out that "the results of fundamental scientific research are the basis of the existence of modern civilization and are related to the further expansion and deepening of knowledge about nature, hoping for its future development" [5]. Thus, freedom of research is equally important for any scientist. It does not matter whether he is engaged in fundamental, technical or humanitarian sciences.

In the evolution of the freedom of research, there are many economic, political and ideological factors that have made it impossible to develop education and conduct research on the issue of learning from ancient times to the present. But in the ancient world, there were no serious restrictions on research and intellectual activity. In this period, the existing facts of the persecution of scientists were considered rare exceptions. For example, although Socrates' thoughts are interesting, he actually had original views about society in the background of his trial. It is interesting that his students were among the accusers, and the main reason for this case was the opinion that his students did not want to convey to the public their theories about the management of society, which they knew well. In fact, it was one of the first known restrictions on research freedom. With all due respect to the ancient world, let us not forget that this was a slave-owning society that could not influence the economic pressure on science. However, in antiquity, at most 25% of scientists supported empiricism and made inventions. In the Middle Ages, that is, from the 5th to the 13th centuries, there was a significant decline in scientific progress as well as in technical progress. The first reason was the economic crisis. But the second reason is the loss of the freedoms of the ancient society and the persecution of scientists. During this period, Alexandria was the largest scientific centre of the ancient world, and the Museum of Alexandria had a famous library and observatory at the same time. Many scientists of the time studied and worked there. However, in the 4th century, when a new religion, Christianity, became a state in Rome, in 391, the Museum of Alexandria was destroyed by fanatics and many famous scientists were persecuted.

Results

At this point, it should be noted that the subject of science ethics is the relationship between science and ethics, i.e. moral evaluation of science and its development, ethical regulation of scientists' behaviour and scientific activity. Among the main principles of scientific ethics, honesty stands out, and in all aspects of the scientist's scientific activity, in 1921, L. Wittgenstein's aphorism that "What cannot be said, keep silent about that" [6] was taken so seriously by

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neopositivists that tried not to focus on the question of the scientific nature of ethics and its place in the philosophy of science. They decided that experiences and emotions may be moral, but not scientifically relevant.

M. Shlyk states that philosophy and science are inseparable in the way "The study of nature does not talk about philosophy, but carries it in itself" [7] and believes that it is impossible to separate the ethics of science. In the critical rationalism of K. Popper, this issue has a slightly different appearance, while I. Lakatos considers the requirement of "falsificationism" - propositions that can only be rejected empirically - as a scientific - "code of scientific pride" [8]. If the fulfilment of this requirement is a condition of scientific rationality, it is up to the scientist to accept or not to accept such a condition, and the choice is only morally justified. K. Popper states that the basis of rational "attitude" is "irrational belief in reason" [9]. There is no irrationalism in this term if it is not misleading. In order to be a participant in a rational debate, scientists must recognize the dominance of rational principles over themselves. The first basis of methodological regulation, which Popper emphasized, corresponds to moral regulation of critical rationalism in science. But ethics in any other sense does not relate to the methods or content of science with the philosophy of science.

In the philosophy of science, the ethics of science takes into account the connection of the acquired knowledge about the object not only with the specific nature of the means and operations, but also with value-goal structures, and explains the connection of "scientific goals with non-scientific, social values and goals" [10]. Today, at the beginning of modern scientific research, unique, historically developing systems were placed in the centre of research, and man was included as a special component. In such a situation, the requirement to explain values not only contradicted the traditional attitude to obtain objectively true knowledge about the world, but also worked as a condition for the implementation of this attitude" [12].

The process of the evolution of sciences shows that bioethics and ecology led to the inclusion of ethical concepts in scientific knowledge. "The development of bioethical research leads to a radical reconstruction of the traditional intellectual technologies of human self-identification. He destroyed the illusion of the natural reality of the limits of human existence and transferred it to the field of communication between doctors and the public. Thus, scientific - biological, medical - speech confronts the scientist with a choice. Decision-making by scientists meant determining the limits of power over human life and death [13]. In such a situation, ethics and science were united in an organic semantic connection.

Conclusion

In the field of ecology, N. Moiseyev emphasized that the principles that ensure the coevolution of man and the biosphere can be formulated with sufficient accuracy using the methods available in modern science. Accepting these principles as the basis of rational behaviour and depending on a person, more precisely, humanity, requires a radical change in moral guidelines [14]. Ecological culture does not agree with the will of the majority of ecologically oriented people. Unlike mechanics, where ecological laws work inevitably and do not depend on people's moral principles and cultural orientations, the implementation of ecological "scenarios" ensures the participation of people with their own will and morals. In this regard, I.K.Liseyev passed successive stages of anthropocentric, sociocentric, cosmocentric and even biocentric approaches to the formation of

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the system of social thought and cultural universals, and was sure that all of them would actually lead to an ecological disaster "...the dominants who determined the development of man-made civilization are ecogenic civilization are more and more inclined to realize that they should be replaced by their dominant ones" [15]. The change in public opinion affects not only the attitude of people to environmental knowledge, but also the knowledge itself.

In general, the systematic analysis of science ethics is considered a serious issue. Adding ethics to every discipline to answer the problem will not solve the problem. The sciences themselves will have to become ethics, a theory of free choice of cultural universals in the field of scientific knowledge.

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